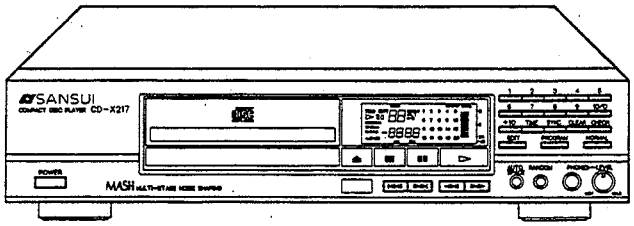
SANSUI

SERVICE MANUAL

CD-X217

COMPACT DISC PLAYER



CAUTION

1. Parts identified by the ⚠ symbol on the schematic diagram and the parts list are critical for safety. Use only replacement parts that have critical characteristics recommended by the manufacturer.
2. Make leakage-current or resistance measurements to determine that exposed parts are acceptably insulated from the supply circuit before returning the appliance to the customer.

NOTICE

1. The symbols UL, UK, EG, EU, SEV, SS and XX <EXPORT> on the parts list and the schematic diagram mean followings respectively.

UL	Manufactured for U.S.A. market. (Underwriters Laboratories approved model.)
UK	Manufactured for United Kingdom market.
EG	Manufactured for F.R. Germany market.
EU	Manufactured for European market.
SEV	Manufactured for Swiss market.
SS	Manufactured for Saudi Arabian market.
XX <EXPORT>	Standard Version.
NON MARK	Common Parts.

2. Some printed circuit boards are not supplied assembled. To separate these in this service manual, the part numbers are not indicated for these boards. However, part numbers for individual parts are indicated.

3. Since some capacitors and resistors are omitted from parts lists in this service manual, refer to the Common Parts List for capacitors and resistors, which was issued on June 1987.

4. Abbreviations in this service manual are as follows:

Abbreviations List

C.R.	: Carbon Resistor	E.B.L.	: Low Leak Bi-Polar Electrolytic Capacitor
S.R.	: Solid Resistor		
Ce.R.	: Cement Resistor		
M.R.	: Metal Film Resistor	Ta.C.	: Tantalum Capacitor
F.R.	: Fusing Resistor	F.C.	: Film Capacitor
N.I.R.	: Non-Inflammable Resistor	M.P.	: Metalized Paper Capacitor
A.R.	: Array Resistor	P.C.	: Polystyrene Capacitor
C.C.	: Ceramic Capacitor	M.M.C.	: Metalized Mylar Capacitor
C.T.	: Ceramic Capacitor, Temperature Compensation	A.C.	: Array Capacitor
		V.R.	: Variable Resistor
E.C.	: Electrolytic Capacitor	S.V.R.	: Semi-Variable Resistor
E.L.	: Low Leak Electrolytic Capacitor	S.W.	: Switch
		Chip R.	: Chip Resistor
E.B.	: Bi-Polar Electrolytic Capacitor	Chip C.	: Chip Capacitor
		S.C.	: Styrol Capacitor

Specifications

Format	Compact disc, digital audio system
Pickup	3-Beam, semiconductor laser
Decoding (D/A)	1-Bit/MASH (MASH is trademark of NTT)
Frequency response	4 Hz to 20kHz, ±0.5 dB
Total harmonic distortion	Less than 0.005% (1 kHz)
Signal-to-Noise ratio	Better than 96 dB
Dynamic Range	Better than 96 dB
Wow & flutter	Below measurable limit
Output voltages/load impedances	
Normal output (LINE)	2 V/47 kohms or more (variable maximum)
Digital output (COAXIAL)	0.5 Vp-p±0.1 V/75 ohms
Headphone output	45 mW (variable maximum)/with 32-ohm load
Power consumption	AC 120, 220~240V, 50/60 Hz
For U.S.A.	AC 120V, 60 Hz
Rated power consumption	13 W
Dimensions	430 mm (16-15/16")W 105 mm (4-5/32")H 280 mm (11-1/32")D
Weight	4.0 kg (9 lbs) net

Remote Controller: RS-1420

Control system	Infra-red ray pulse system
Power requirements	DC 3 V
Dimensions	48 mm (1-13/16")W 18.5 mm (3/4")H 185 mm (7-5/16")D
Weight	110 g (0.25 lbs) including batteries

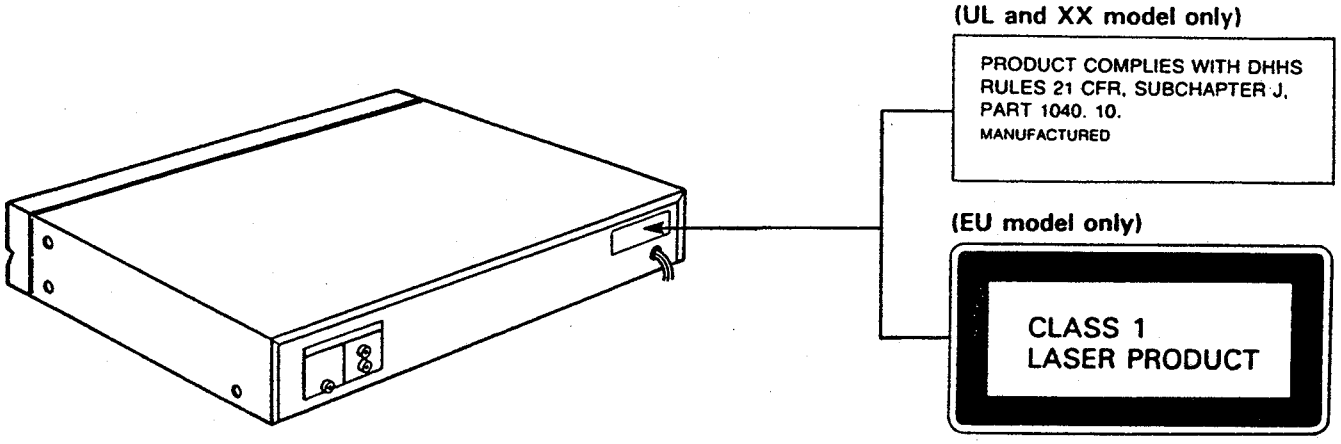
* Design and specifications subject to changes without notice for improvements.

* Due to local laws and regulations, this unit sold in some areas are not equipped with variable voltage selectors.

1. SAFETY PRECAUTIONS FOR CD PLAYER

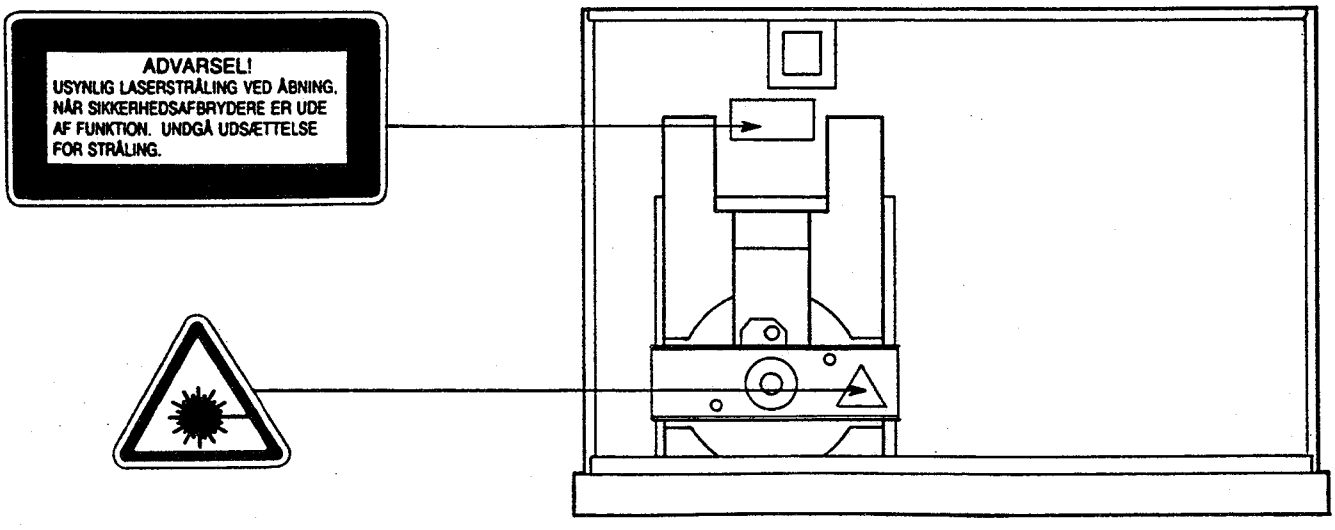
CAUTION : USE OF CONTROLS FOR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.
THE COMPACT DISC PLAYER SHOULD NOT BE ADJUSTED OR REPAIRED BY ANYONE EXCEPT PROPERLY QUALIFIED SERVICE PERSONNEL.

The following label has been affixed to the unit, listing the proper procedure for working with the laser beam.

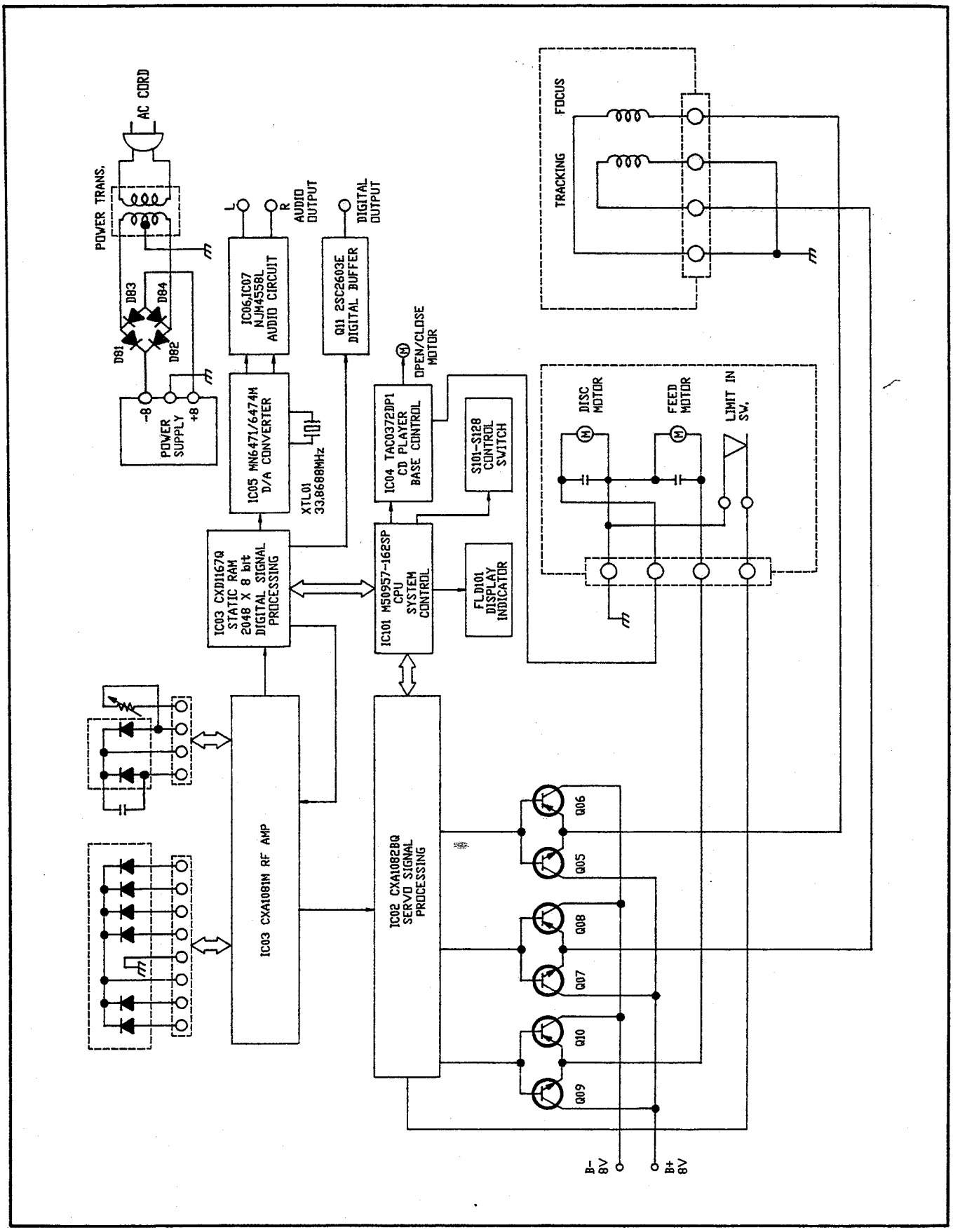

(UL and XX model only)
PRODUCT COMPLIES WITH DHHS RULES 21 CFR, SUBCHAPTER J, PART 1040. 10.
MANUFACTURED
(EU model only)
CLASS 1
LASER PRODUCT

UL.....	Manufactured for U.S.A market.
XX	Standard Version.
EU.....	Manufactured for European market.

(EU model only)

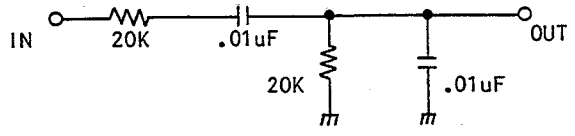

ADVARSEL!
USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.

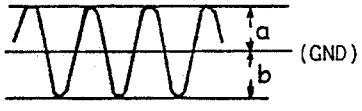
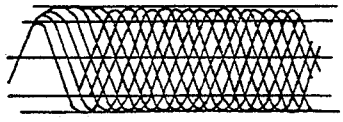
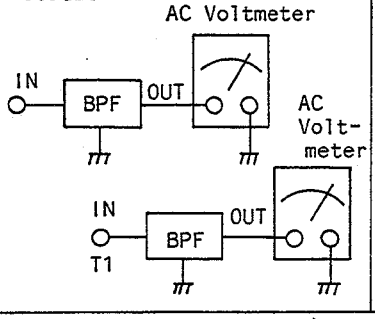
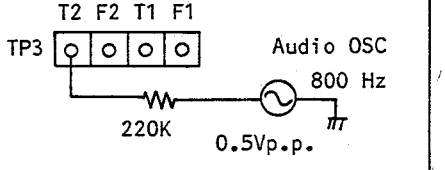
2. BLOCK DIAGRAM



3. ADJUSTMENT

Cautions
1. Turn the power off before removing the bonnet.
2. See Figure for the locations where adjustments are to be carried out.
3. Use the EIAJ test disk CD-1.
4. The following band pass filter (BPF) is used for adjustments.
5. IF the adjustment is unsatisfactory and playback is not possible, adjust as follows:
   1) Set VR01,VR02,VR03 and VR04 to their mid points.
   2) Adjust the VCO (VR05) and select playback.
   3) Carry out adjustment steps 2 to 5.
6. In executing steps 2 to 5, connect the probe after playing the disc.



Step	Item	Measuring Location	Adjustment Location	Adjustment	Conditions and Notes
1	VCO adjustment (Carry out in STOP state)	Connect a frequency counter to TP3 & TP4	VR05 (VCO)	4.32MHz ± 30kHz	Ground EFM of TP2 Turn on the power then wait at least 10 seconds before adjusting.
2	Tracking offset adjustment	Connect an oscilloscope to T1 of TP2	VR01	 Set the oscilloscope to the DC range. Adjust so that a and b have the same level.	Ground T2 of TP2 Playback the 8th track of CD-1
3	Focus offset	Connect an oscilloscope to the RF of TP1	VR02	Set to maximum.  Carry out adjustments to achieve a clean overall pattern and so that the indicated portion is wide and symmetrical.	Playback the 8th track of CD-1.
4	Tracking gain adjustment	Connect AC voltmeter to T1 of TP2 via the BPF. Connect AC voltmeter to T2 of TP2 via the BPF.	VR04	Using the indicated voltage at T1 of TP2 as a reference, adjust the voltage at T2 to -3.5dB. 	 Playback the 4 th track (no signal) of CD-1. Apply an 800Hz signal of 0.5Vp-p from SG to T2 of TP2 via resistance of 220K ohm. Adjust VR04 to the position shown in the figure. IF you do not have a BPF or if -3.5dB cannot be achieved.

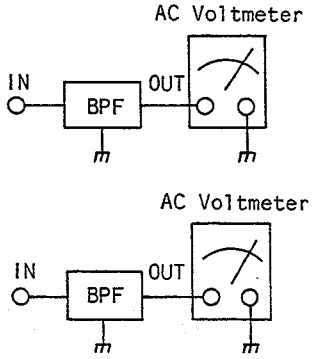
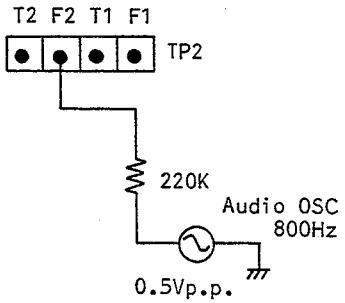
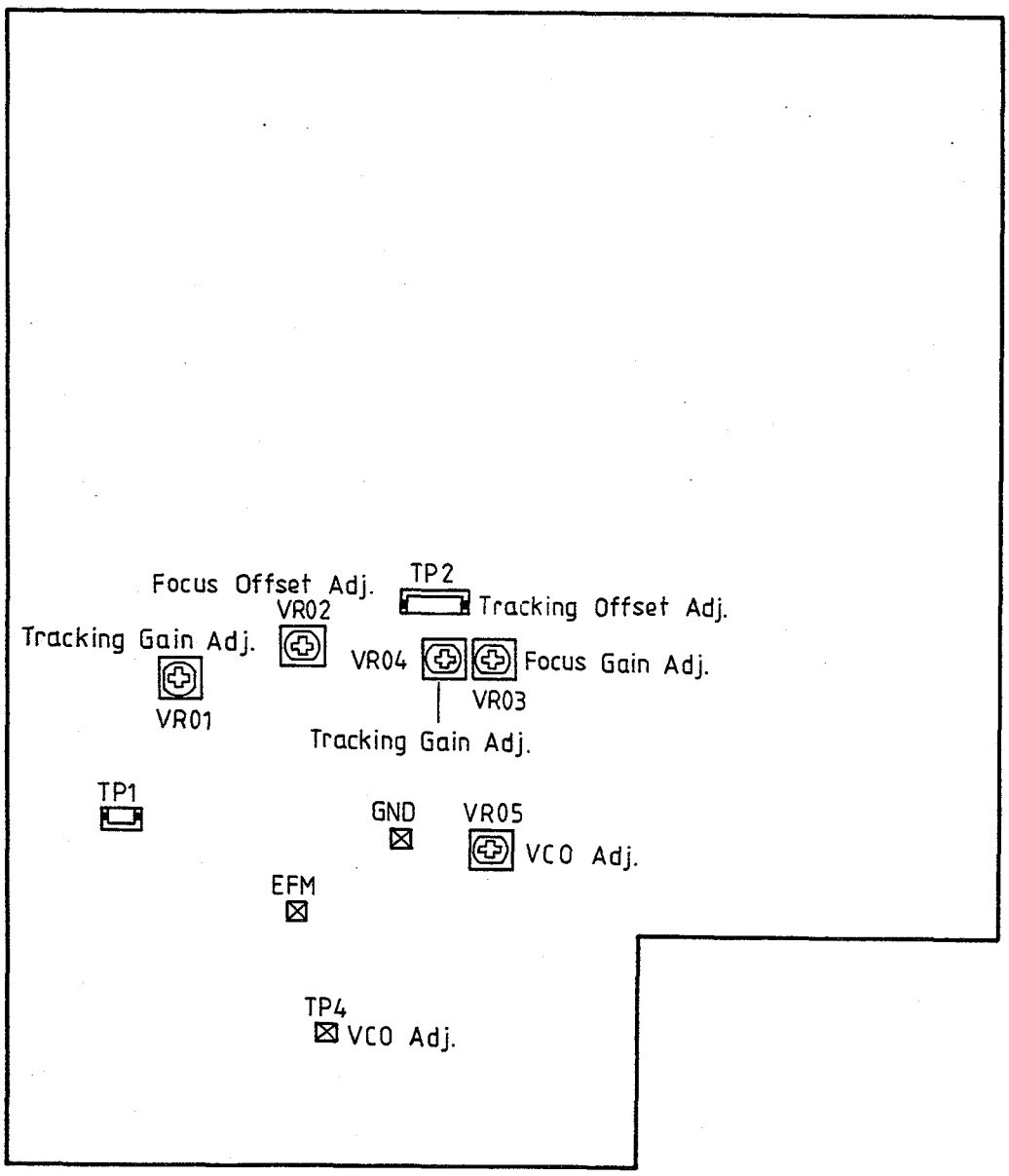
Step	Item	Measuring Location	Adjustment Location	Adjustment	Conditions and Notes
5	Focus gain adjustment	Connect AC voltmeter to F1 of TP2 via the BPF. Connect AC voltmeter to F2 of TP2 via the BPF.	VR03	 Using the indicated voltage at F1 of TP2 as a reference, adjust the voltage at F2 to -2.5dB	 Playback the 4th track (no signal) of CD-1. Apply an 800Hz Signal of 0.5Vp-p from SG to F2 of TP2 via a resistance of 220K ohm. Adiust VR03 to position shown in the Figure if you do not have a BPF or if -2.5dB cannot be achieved.

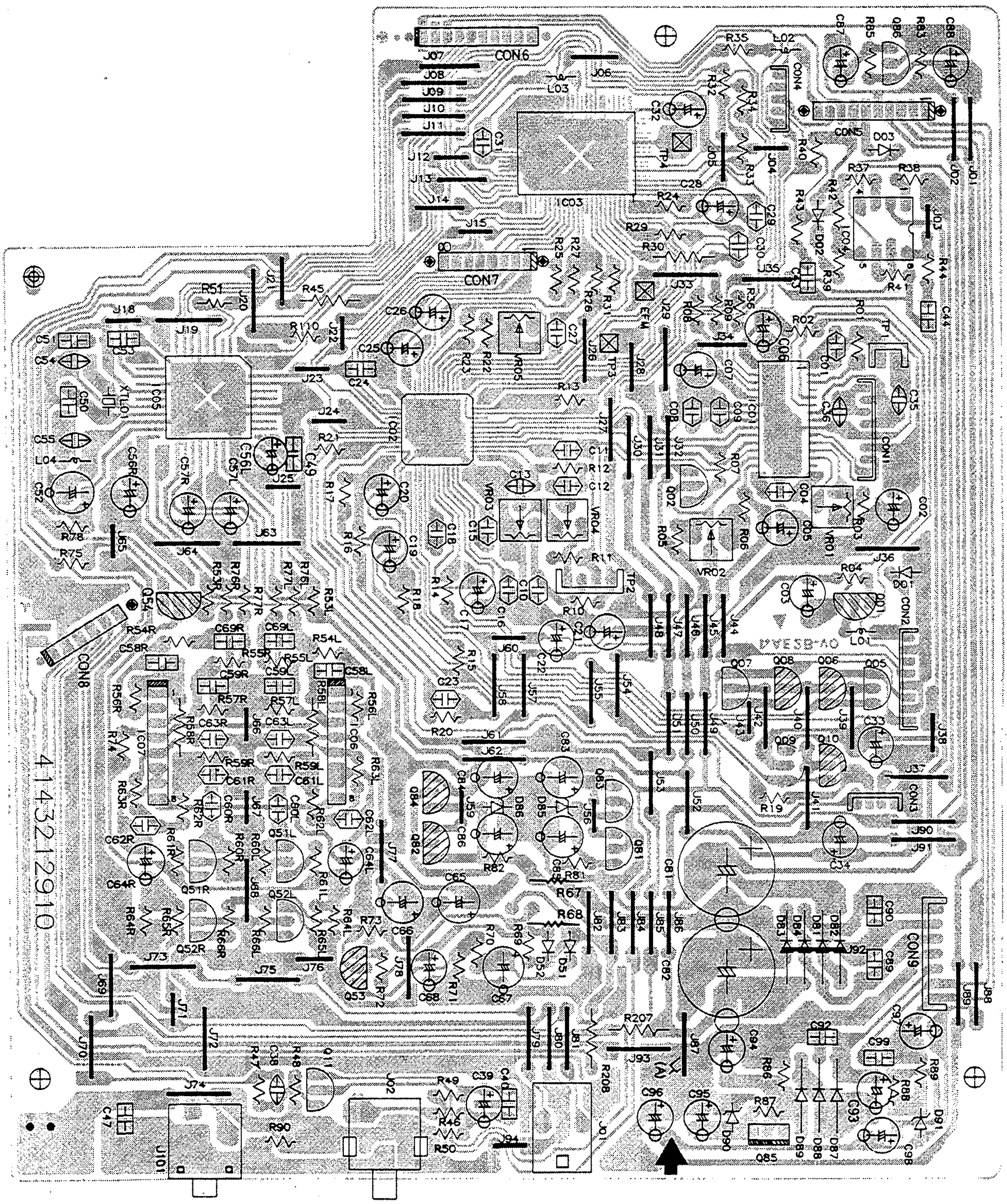
Fig. 3-1 Adjustment points on Decoder Board



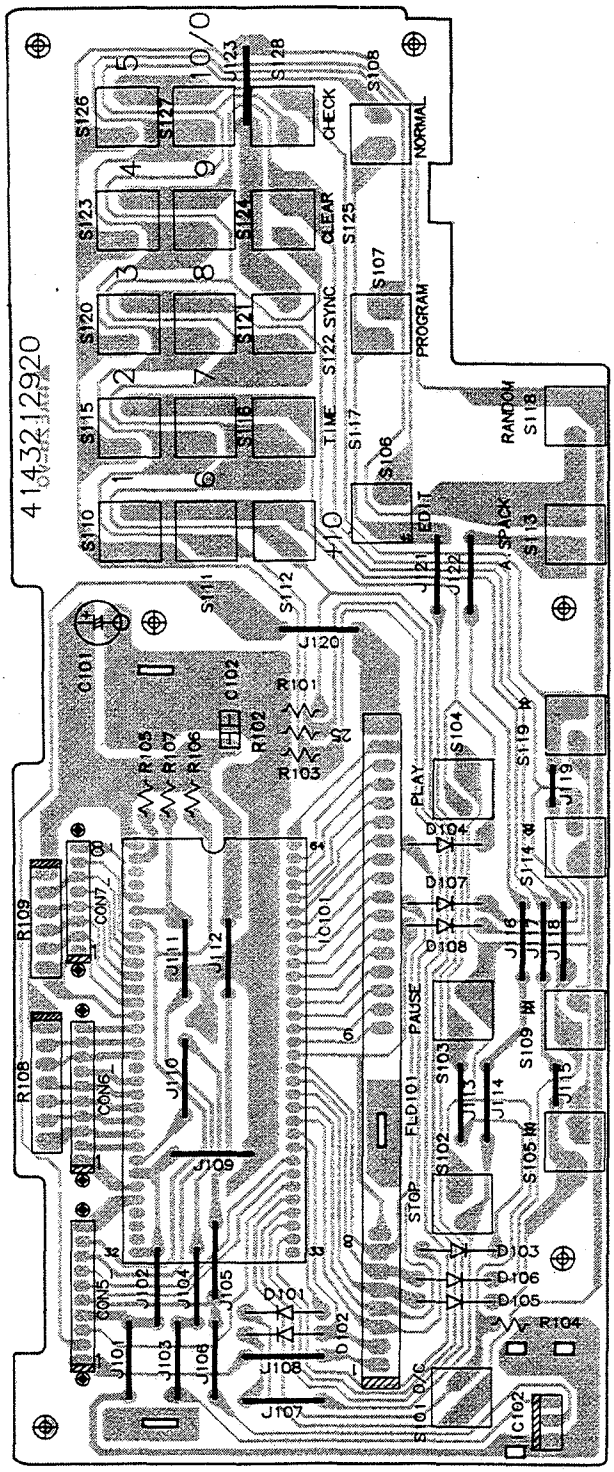
4. PARTS LOCATION ON BOARD

4-1. CD Decoder Board

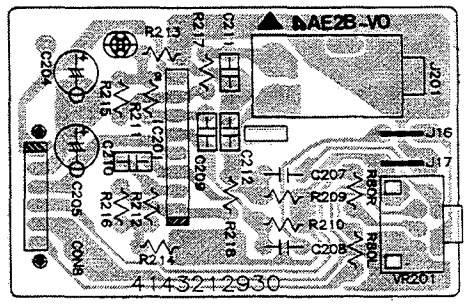
Component Side



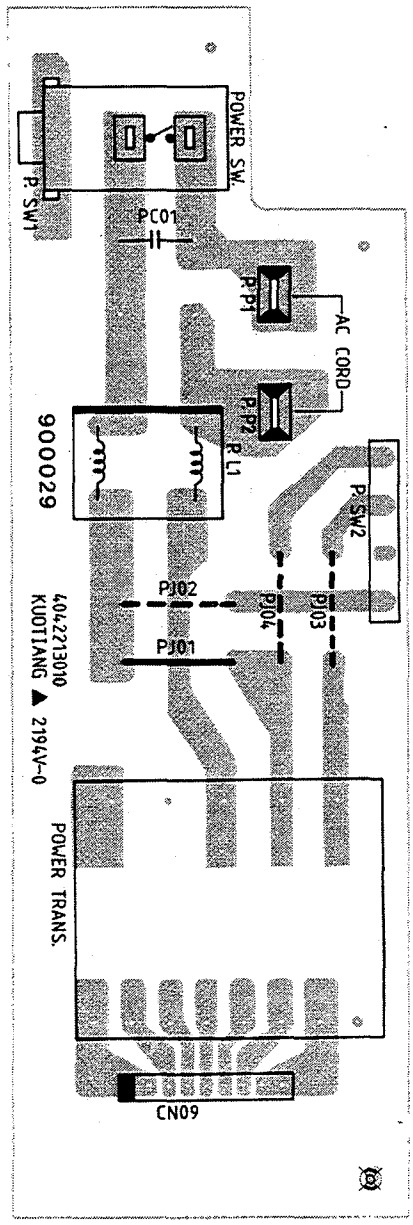
4-2. CD Control Board
Component Side



4-3. H/P AMP Board
Component Side



4-4. Power Supply Board
Component Side



5. PARTS LIST OF BOARD

5-1. CD Decoder Board (Part No. C143212911)

Ref. No.	Part No.	Description
• Transistor		
Q01	410000952L	2SC952L
Q02	410020945P	2SC945P
or	410020945Q	2SC945Q
Q05	410022001L	2SC2001L
Q06	410000952L	2SC952L
Q07	410022001L	2SC2001L
Q08	410000952L	2SC952L
Q09	410022001L	2SC2001L
Q10	410000952L	2SC952L
Q11	410022603E	2SC2063E
or	410022603F	2SC2063F
Q51L,51R	410023327A	2SC3327A
or	410023327B	2SC3327B
Q52L,52R	410023327A	2SC3327A
or	410023327B	2SC3327B
Q53,54	41000933SR	2SA933SR
Q81	410030313E	2SD313E
Q82	410000952L	2SC952L
Q85	410001249R	2SA1249R
or	410001249S	2SA1249S
Q86	410022603E	2SC2063E
	410022603F	2SC2603F
XTL01	410090338M	X'TAL 33.8688MHz
• IC		
IC01	415C01081M	CXA1081M
IC02	415C010821	CXA1082BQ
IC03	415C01167Q	CXD1167Q
IC04	4157003724	TCA0372DP1
IC05	415006474M	MN6474M
IC06,07	415904558L	NJM4558L
• Diode		
D01-03	4120901330	1SS133
D51,52	4120901330	1SS133
D81-84	4138104002	1N4002L
D85,86	412050056B	MTZ5.6B
D87-89	4138104002	1N4002L
D90	41205J330C	MTZ33C
D91	412050056B	MTZ5.6B
vR01	5226203177	20K ohm S.V.R Tracking Gain Adj.
vR02	5226203177	10K ohm S.V.R Focus Offect Adj.
vR03	5226203177	20K ohm S.V.R Focus Gain Adj.
vR04	5226203177	20K ohm S.V.R Tracking Gain Adj.
vR05	5226202177	2K ohm S.V.R VCO Adj.
L01	4325010093	P. Coil 10uH
L02,03	4325022093	P. Coil 22uH
J01	4500800294	RCA Jack HSP-222V-11
J02	4500800287	RCA Jack 1P 0501015-C
J101	4500100296	Jack YKB21-5130

5-2. CD Control Board (Part No. C143212920)

Ref. No.	Part No.	Description
•IC		
IC101	415950957P	M50957-162SP
IC102	714001521X	GP1U521X
• Diode		
D101-108	4120141480	1N4148
FLD101	4110540140	FLD CD CP5401GR
S101-128	4400000156	Tact Swicth SKHVBE3520-CP

5-3. H/P AMP Board

Ref. No.	Part No.	Description
•IC		
IC201	415904556L	NJM4556L
vR201	5020124137	VR 20KBx2 RX09K12A0009-CP
J201	4500700290	H/P Jack HTJ064-09DG

5-4. Power Supply Board (Part No. C042213010)

Ref. No.	Part No.	Description
⚠ P. SW1	4430102601	Power Switch
P. L1	7068406013	Line Filter LF-4N-152
⚠ PC01	5100103043	Spark Ceramic .01 AC 400V

6. MAIN PARTS REPLACEMENT (See Exploded of Cabinet on Page 10)

6-1. Mechanism Ass'y

1) Remove 6 screws (M28a) and remove the top cabinet (M29).
2) Remove 2 PCB support (M39) and 2 screws (M16b) and 2 screws (M25b) and remove the CD Decoder PCB assembly (M30).
3) Remove 4 screws (M3c) and remove the front escutcheon (M1).
4) Remove 3 screws (M16d) and remove the CD player assembly (M17).
5) Remove 6 screws (M22e) and remove the CD Control PCB assembly (M21).
6) Remove 1 screw (M22f) and remove the H/P AMP PCB assembly (M43).
7) Remove 1 screw (M25g) and remove 2 screws (M35g) and 2 screws (M22g) and remove the power supply PCB assembly.

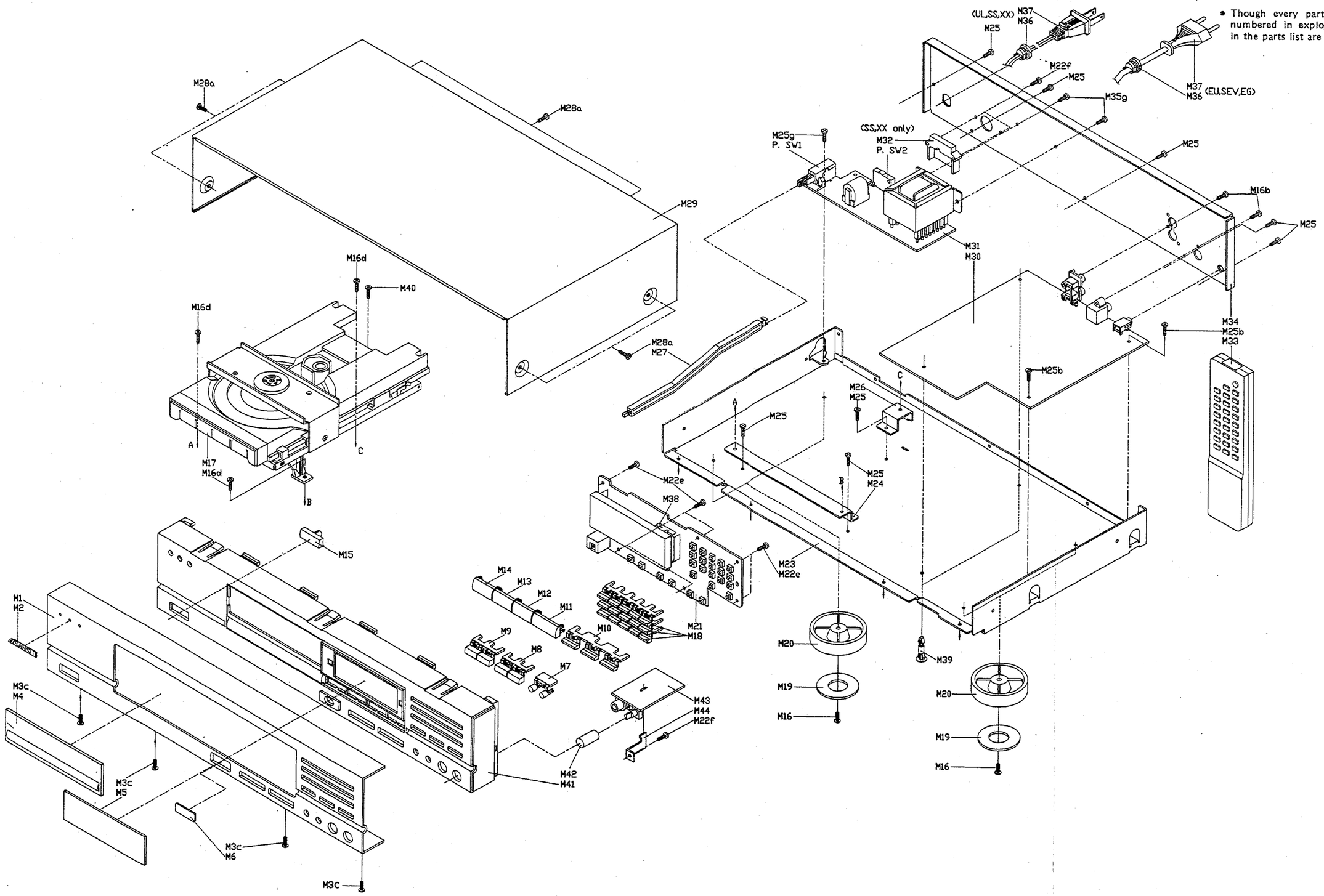
7. PARTS LIST OF CABINET

7-1. Cabinet

Ref. No.	Part No.	Description
M1	1003038521	Front Pnel
M2	JS05051200	Logo Type Badge H5 G
M4	1005038511	CD Door
M5	1006038511	Display Window
M6	1012038511	Sensor Window
M7	1011038511	Push Button
M8	1010038511	Search Knob B
M9	1009038511	Skip Knob A
M10	1008038511	Control Knob B
M11	1015038511	Play Button
M12	1016038511	Pause Button
M13	1017038511	Stop Button
M14	1018038511	Open Button
M15	1014049921	Power Button
M17	C486040382	CD Player KSL-210AFM
M18	1007038511	Control Knob A
M19	JS27593800	Foot Sheet (20)
M20	JS85047300	55 Foot B
M21	C143212920	CD Control PCB Assembly
M27	2004038511	Power Link
M29	1004038511	Top Cover
M30	C143212910	CD Decoder PCB Assembly

Ref. No.	Part No.	Description
M31	C042213010	Power Supply PCB Assembly
M33	7158511081	Remote Control Assembly
M36	4580200006	Cord Stopper SR-4N-6
⚠ M37	4631112070	AC Cord UL/CSA 7F BLK (UL)
⚠	463021L065	AC Cord BLK 6.5F (SS,XX)
⚠	463221L065	AC Cord VDE 6.5F BLK2 (SEV,EG,EU)
⚠	4633202080	AC Cord BS 8F BLK2 (UK)
M39	2023019201	PCB Support
⚠ TP1	420A481150	Power Transformer EI-48 (UL)
⚠	420A484151	Power Transformer EI-48 (SS,XX)
⚠	420A485163	Power Transformer EI-48 (SEV,EG,EU,UK)
P. SW2	4420000150	Vol,Select Switch HXW0351-910010
M41	1002038521	Front Chassis
M42	1025038521	Lever Knob
M43	----------	H/P AMP PCB assembly

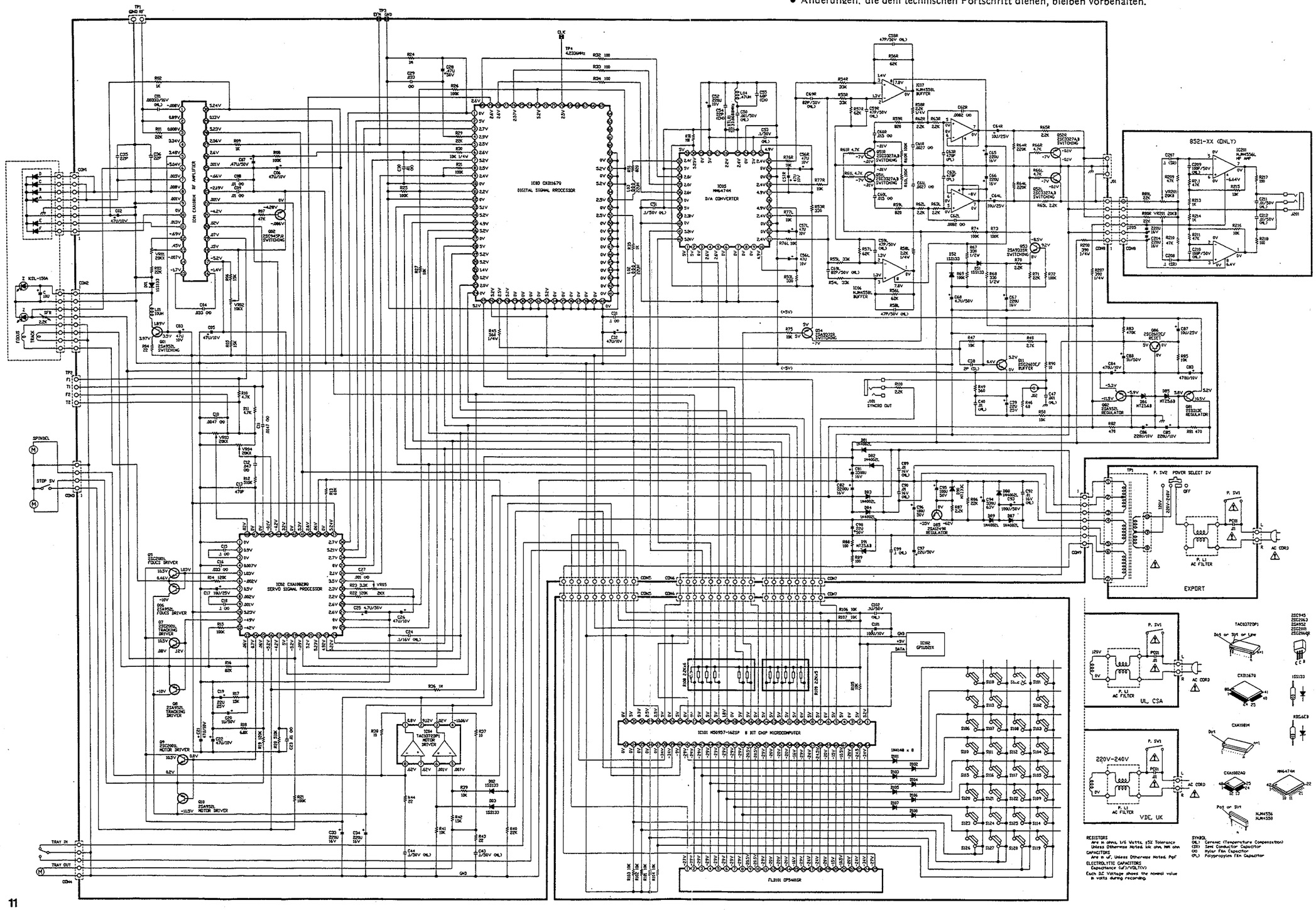
8. EXPLODED VIEW OF CABINET



• Though every part included in Cabinet is numbered in exploded view, parts unlisted in the parts list are not supplied.

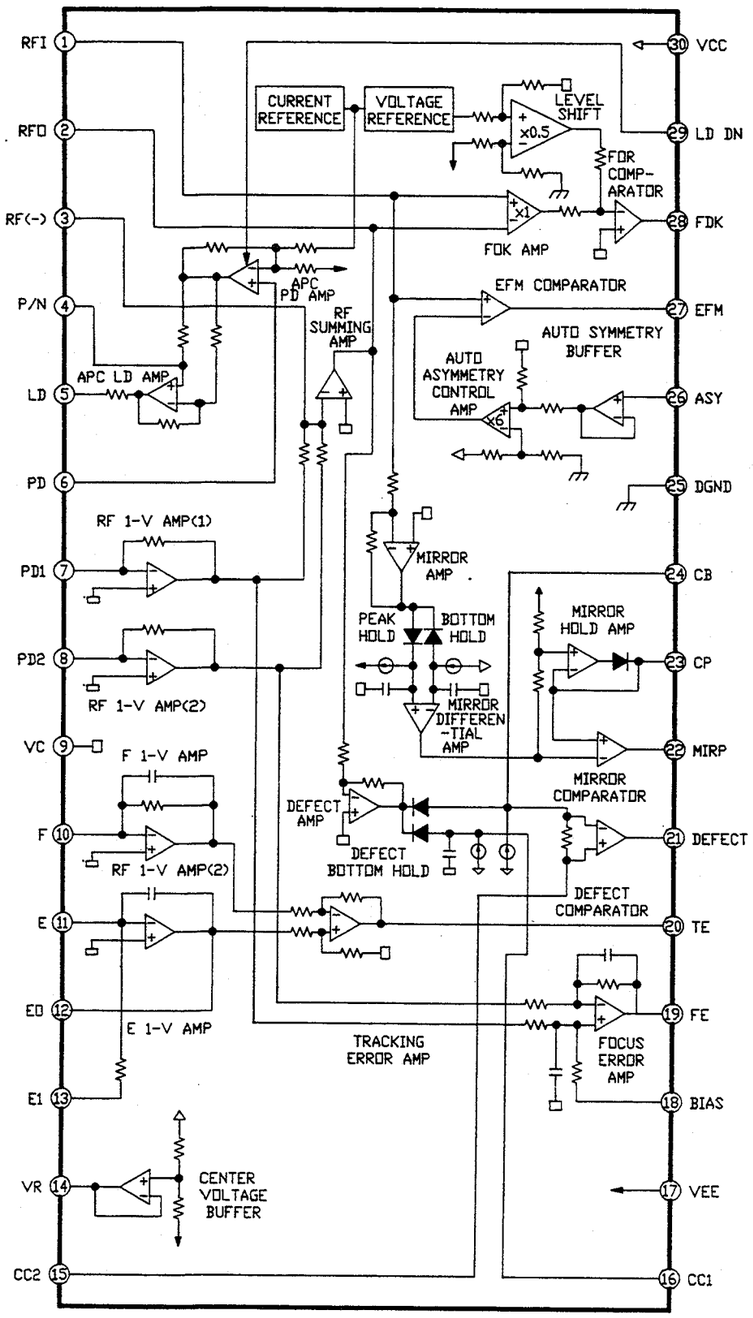
9. SCHEMATIC DIAGRAM

- Design and specifications subject to change without notice for improvement.
- La présention et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
- Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.

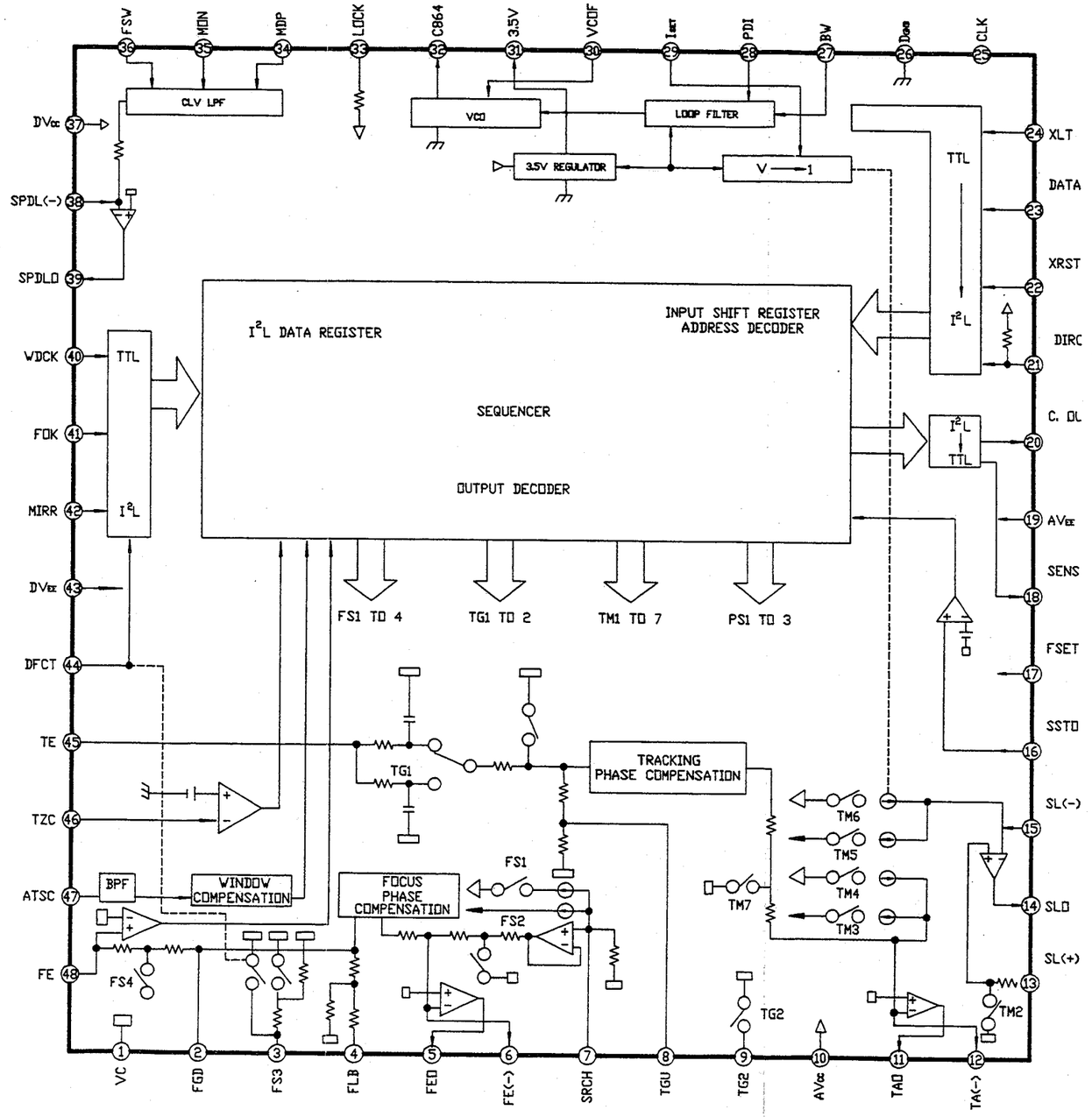


10. INTERRIOR BLOCK DIAGRAM OF IC

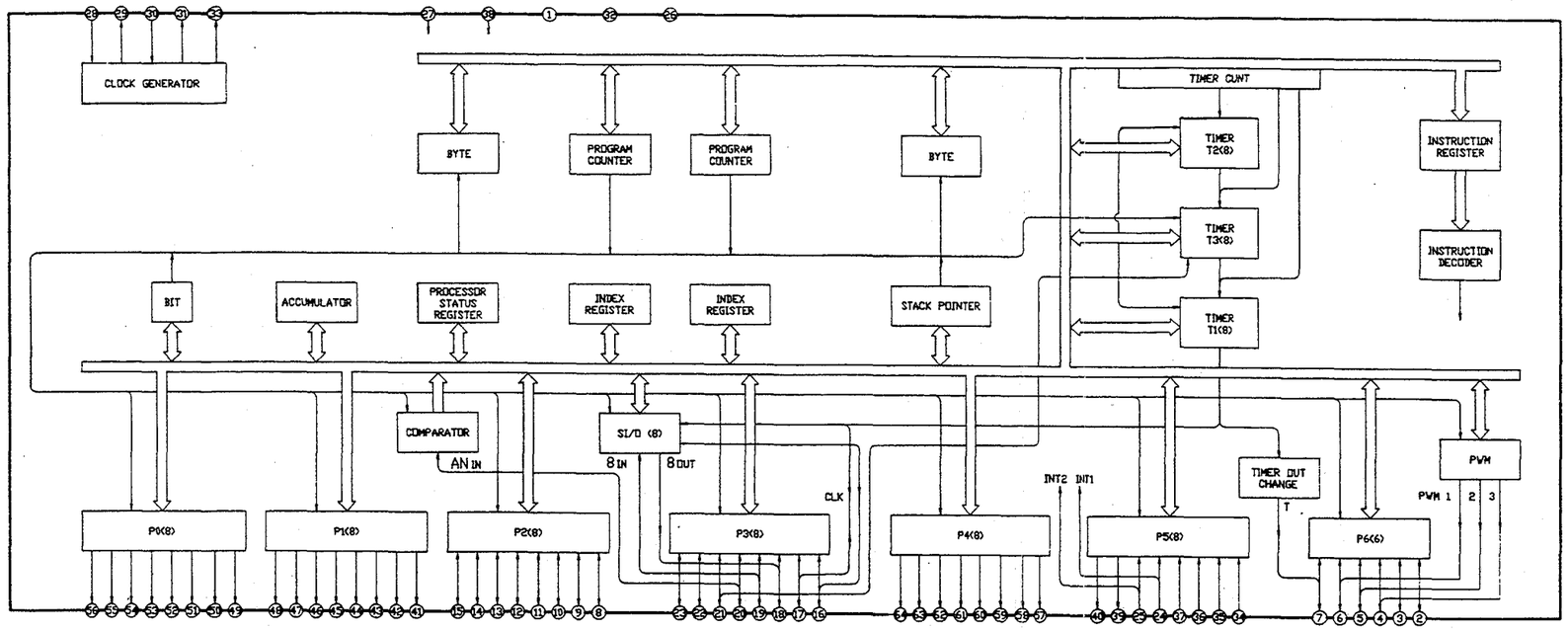
CXA1081M
(RF AMP)



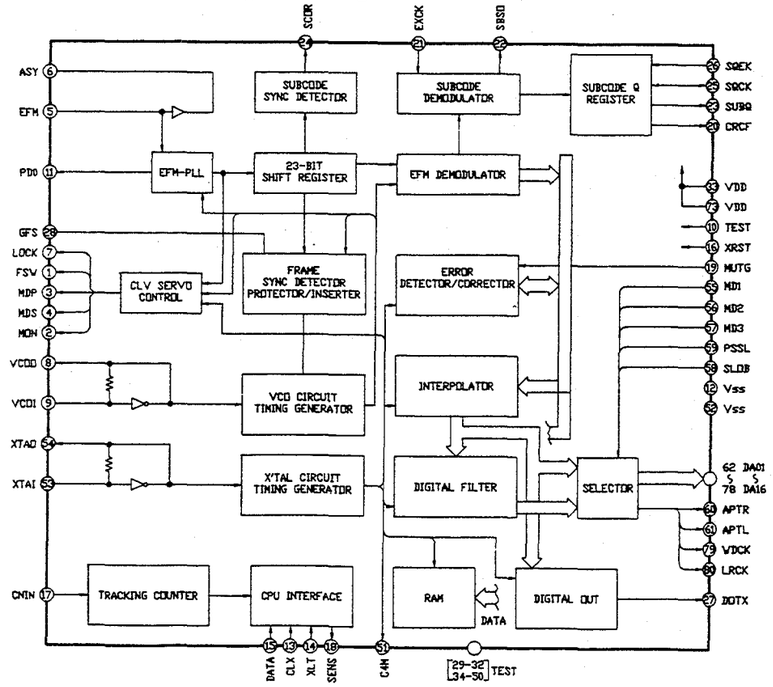
CXA1082BQ
(Servo Signal Processor)



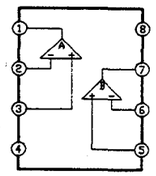
M50957-162SP (8 Bit Chip Microcmputer



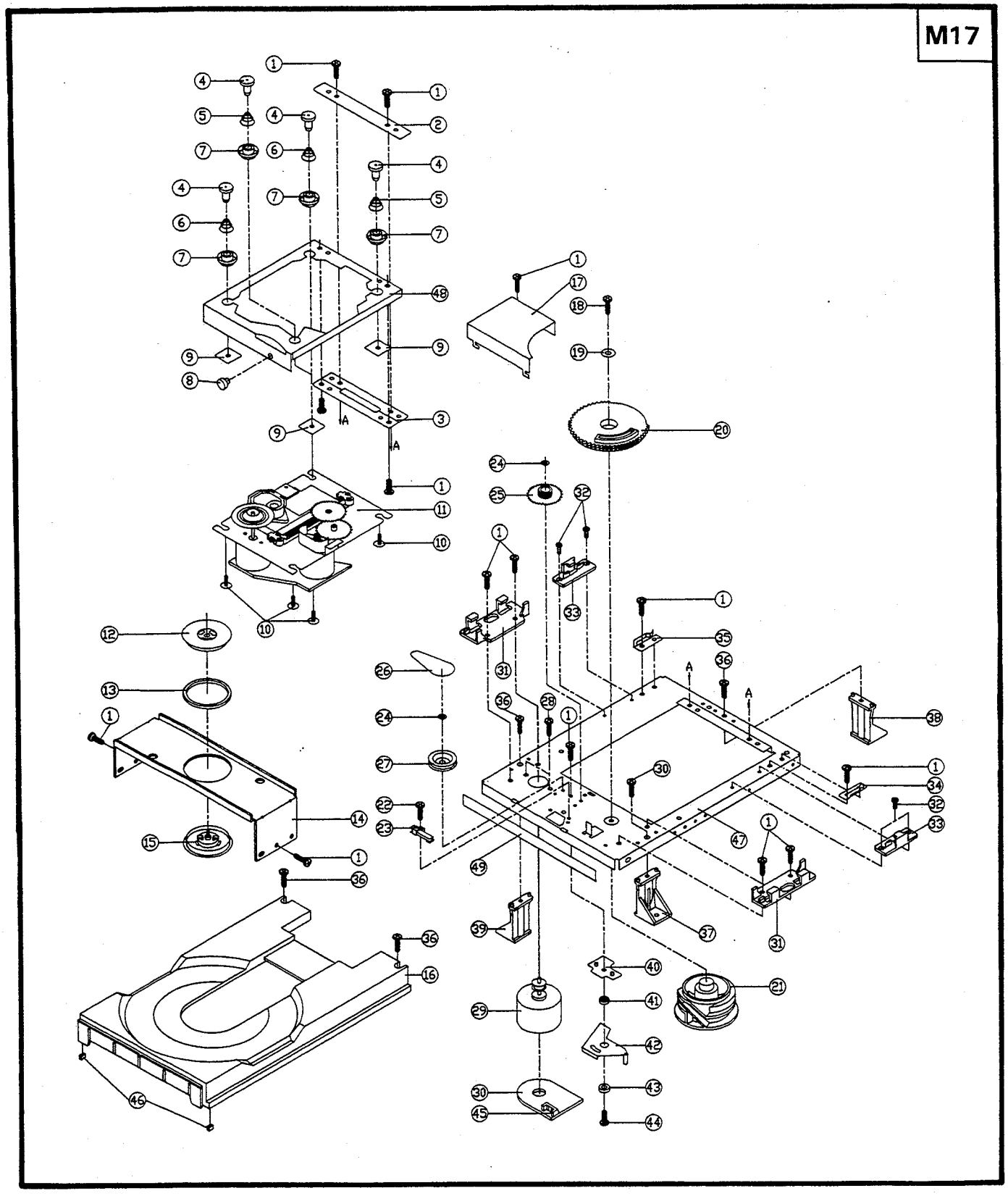
CXD1167Q (Digital Signal Processor)



NJM4556L
NJM4558L
(HP AMP)



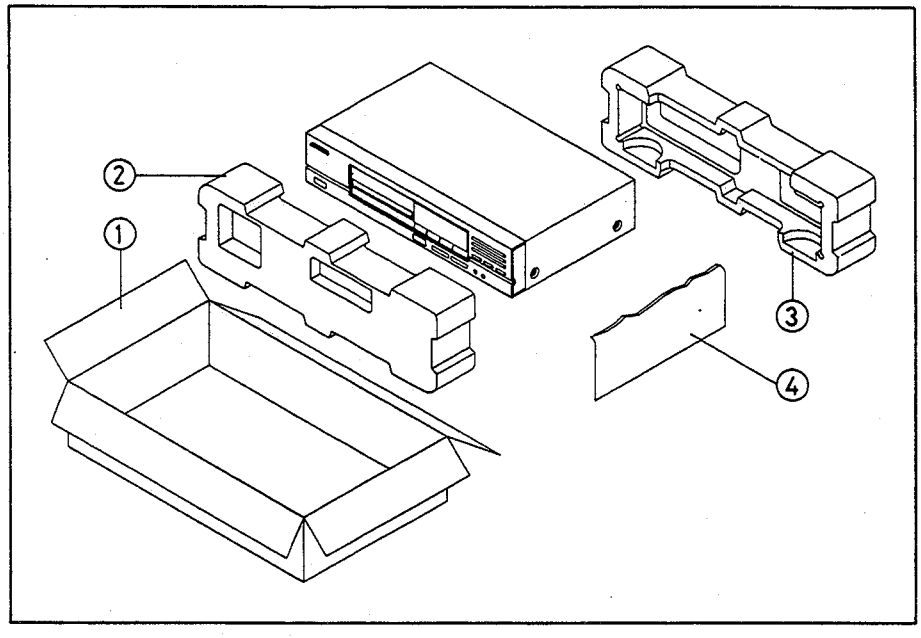
11. EXPLODED VIEW OF CD PLAYER



Note: Use this diagram for reference only. Parts not available separately.

12. PACKING LIST

Ref. No.	Part No.	Description
1	9009038521	Carton (UL)
	9010038521	Carton (UK,SEV,EG,SS,EU,XX)
2	9001038511	Snow Box L
3	9002038511	Snow Box R
4	9903806046	Poly Bag 38 x 60



13. ACCESSORY LIST

Ref. No.	Part No.	Description
	5620100051	Patch Cord BLK-1M
	5620100052	3.5ϕ ST Plug BLK-1M
	4620320030	Battery R6P(N)/SUM-3N
	9080018070	Instruction Book (UK,SEV,SS,XX)
	9080018210	Instruction Book (EU,EG)
	9902304046	Poly Bag (1/B) 23 x 40